

Remarks/Arguments

Claims 1-31 are pending in this application. Applicants have amended claim 1 herein. No additional fee is due at this time.

Applicants note the allowance of claims 17-31. Applicants appreciate the Examiner's kind attention to this application and her willingness to move this application forward towards allowance.

The Examiner has rejected claim 1-12, 14, and 15 under 35 U.S.C. § 102(a, e) in view of U.S. Patent 6,617,647 to Yamazaki. As required for a proper 102 rejection, the Examiner has tried to show that each limitation in the Applicants' claims is present in Yamazaki. In making this showing, the Examiner has likened the impurity regions, for example 707 of Fig. 7, of Yamazaki to the engineered arrays recited in Applicants' claims. However, there are significant differences between the impurity regions of Yamazaki and the engineered arrays of Applicants' invention.

While Yamazaki specifies specifically placed *regions of impurities* as discussed above, the positions of individual dopant atoms in each impurity region of Yamazaki are not controlled. Rather, the process of distributing atoms within each region according to Yamazaki is stochastic in nature, as evidenced by Expression 7 in column 13, and the relevant discussion, where mobility is influenced by concentration rather than positions of individual atoms.

With Applicants' invention, by contrast, the position of *each atom within the engineered array* is substantially fixed by controlled placement. Indeed, this is part of Applicants' definition of "engineered array" as can be appreciated from Applicants' specification. Claim 1 has been amended to make this part of the definition of engineered array explicit by reciting, "a position of each component atom of the engineered array is substantially fixed by substantially controlled placement" Support for this recitation can be found throughout the specification and drawings, but especially, for example, in paragraph 37. Applicants submit that claim 1 as amended patentably distinguishes their invention from Yamazaki. Since this recitation is incorporated in all claims dependent from claim 1 through their dependency, Applicants submit that claim 2-12, 14, and 15 are patentable over Yamazaki for at least this reason.

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The Examiner has rejected claims 13 and 16 under 35 U.S.C. § 103(a) in view of Yamazaki in combination with U.S. Patent 6,380,036 to Oda et al. These claims depend from claim 1, and thus include all the limitations of amended claim 1 through dependency. Since this rejection was based in part of the finding of engineered arrays as recited in Applicants' claims in Yamazaki, Applicants submit that these claims are now patentable for at least the same reasons claim 1 is patentable, as discussed above, and thus require no further discussion.

Applicants believe they have responded to all concerns raised by the Examiner. Reconsideration and allowance of this application as amended is hereby requested.

Respectfully submitted,

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Steven B. Phillips
Registration No. 37,911
Moore & Van Allen
P.O. Box 13706
Research Triangle Park, NC 27709
(919) 286-8000 (telephone)
(919) 286-8199 (facsimile)